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CHEMICAL COMPOSITION OF NETTLE (*Urtica dioica* L.) SEEDS AND FATTY ACID COMPOSITION OF NETTLE SEED OIL

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INTRODUCTION



Stinging nettle (*Urtica dioica* L.) is a perennial flowering plant belonging to the family Urticaceae. It is a good source of minerals, especially iron, vitamin C and pro-vitamin A, but it is also rich in protein, carbohydrates and oil. Research results indicate a high nutritive value for nettle and confirm their extensive health-promoting properties.

The aim of this work was to determine the chemical composition (moisture, ash, fiber, oil, protein, starch and soluble sugars content) of nettle seeds ("Jeligor", Svrljig, Serbia) and fatty acids composition of nettle seed oil.

EXPERIMENTAL

The content of soluble sugars and starch was determined by the anthrone colorimetric assay using glucose as standard.

The ash content was determined by annealing of the sample in a furnace at 850 °C.

The fiber content was determined by the method of Kirschner.

The protein content was determined according to the standard Kjeldahl procedure (Nx5.7).

The oil was obtained by extraction by using a reflux and trichloroethylene as a solvent and evaporation the solvent under vacuum.



The composition of fatty acids was determined by using the GC method.



RESULTS AND DISCUSSION

Table 1. Chemical composition of nettle (*Urtica dioica* L.) seeds

Constituents	Content (g/100g)
Starch	10.3±0.33
Soluble sugars	3.12±0.11
Protein	17.5±0.5
Oil	20.1±1.02
Fiber	7.92±0.18
Ash	13.06±0.42
Moisture	5.15±0.09

*mean value ± standard deviation for number of replication n=3

Some of previous studies showed that proteins, oils and carbohydrates are the most abundant constituents in seeds, and their content was mainly greater than 20% (Srinivasan, 2018; Marineli et al., 2014).

The results showed that the most of the chemical composition consists of oil with the content of 20.1%, followed by proteins with the content of 17.5%. The content of starch and soluble sugars also accounts for a significant proportion of the total chemical composition of nettle seeds and was 10.3% and 3.12%, respectively. The ash and fiber content was 13.06% and 7.92%, respectively, at the moisture content of 5.15%.

Table 2. Fatty acid composition of nettle seed oil

Fatty acid	Peak	(g/100g of oil)
Palmitic acid (C16:0)	1	1.14
Linoleic acid (C18:2)	2	86.05
Oleic acid (c9-C18:1)	3	12.03
Elaidic acid (t9-C18:1)	4	0.69
Stearic acid (C18:0)	5	0.09

Among the fatty acids, the linoleic acid was the most abundant (86.05%), followed by oleic acid (12.03%).

According to research of Guil-Guerrero et al. (2003), linoleic acid also was the predominant fatty acid in the nettle seeds, while leaves were richer in α -linolenic acid.

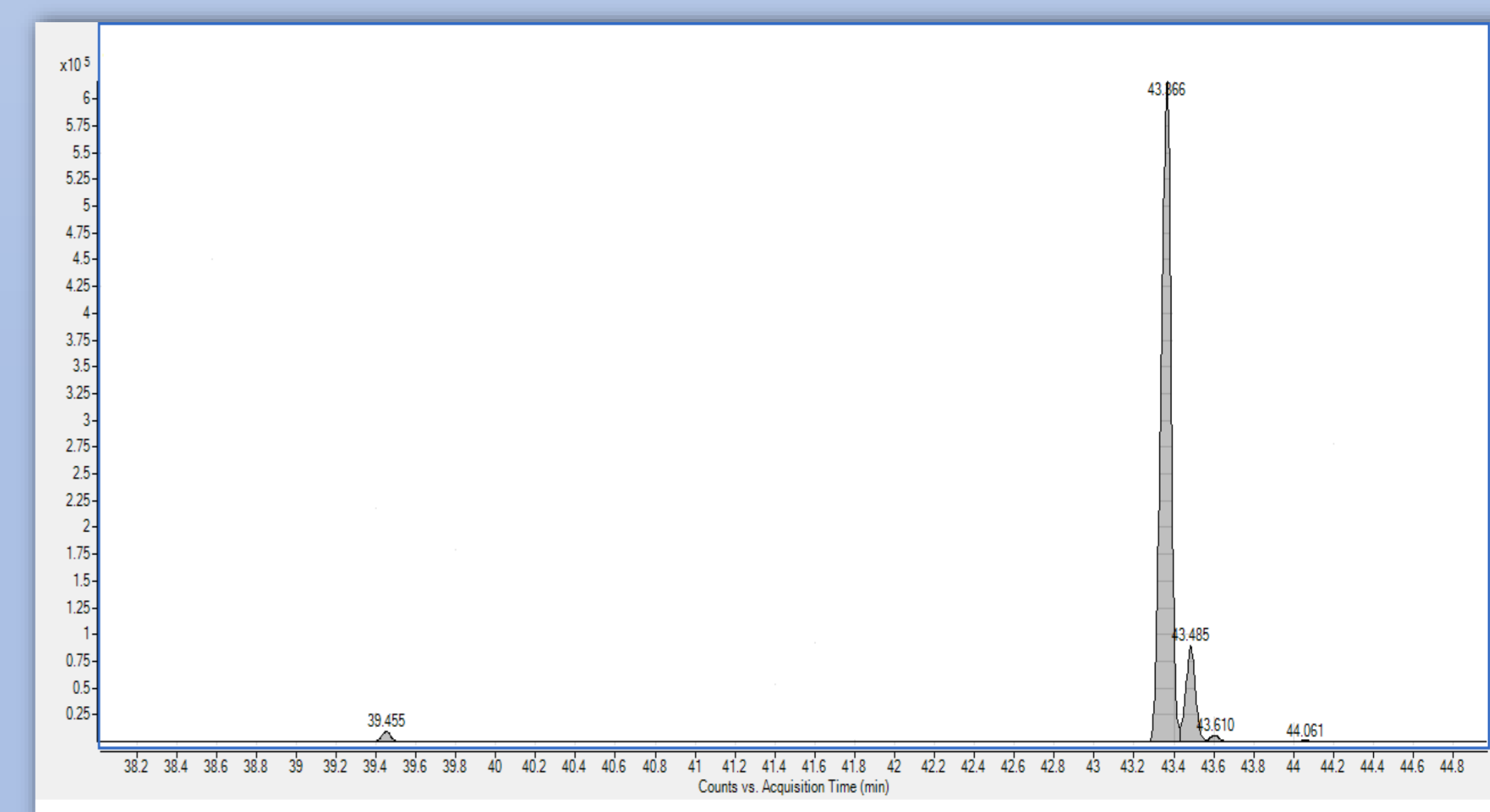


Figure 1. GC chromatogram of the oil extracted by using trichloroethylene

CONCLUSION

The results demonstrated the nettle seeds could be a good supplement in bakery products based on cereals to increase the nutritional value.

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